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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/822,609 | 04/12/2004 | Juin-Yih Lai | 18807-093 | 3297 |

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WPAT, PC
7225 BEVERLY ST.
ANNANDALE, VA 22003

| EXAMINER | |
|---|---|
| MAHYERA, TRISTAN J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1615 | |

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| 11/03/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/822,609 | LAI ET AL. | |
| | Examiner | Art Unit | |
| | TRISTAN J. MAHYERA | 1615 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-31,36,37 and 40* is/are pending in the application.

4a) Of the above claim(s) *1-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30,31,36,37 and 40* is/are rejected.

7)☒ Claim(s) *30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

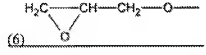
**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of Group I, in the reply filed on 6/30/2008 is acknowledged. Examiner respectfully thanks Applicant for the species election of X as



Z as silicon, m=1 and n=3. Because Applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Status of Claims*

Claims 1-31, 36, 37 and 40 are pending. Claims 1-29 are withdrawn pursuant to 37 CFR 1.142(b), as being drawn to the non-elected invention. Claims 32-35 and 38-39 are cancelled. Claims 30, 31, 36, 37 and 40 are examined on the merits.

### *Claim Objections*

Claim 30 is objected to because of the following informalities: The Examiner believes that the word "with" or a similar phrase has been left out of line 9 between "combine" and "each other". The section of the sentence should read "...combine with each other...".

***Claim Rejections - 35 USC § 112 2nd Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 30, 31, 36, 37 and 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 30 states that "...said X group comprises one of the following group consisting of...". This is indefinite because the use of the word "comprising" is an open transitional phrase, which is in direct contradiction to the "consisting of" language that is used in such a Markush group. Therefore the claim does not make distinct the boundaries of the X group.

Claim 40 recites the limitation "said nitrogen atoms-containing group"" in line 2. There is insufficient antecedent basis for this limitation in the claim. According to the specification, the "nitrogen atoms-containing group" is only within a Z group (see e.g. specification p[0016]), however, it is unclear how the structure would bind to such a Z group, if this interpretation is correct.

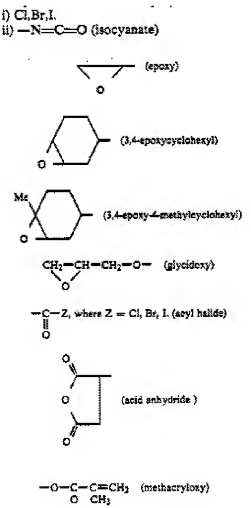
***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 30, 31 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by SAU (US 5,071,978 see PTO-892).

SAU teaches a material having cross-linking structure that is a modified substrate bonded to bridges formed by a cross-linking agent. The substrate contains chitosan (claim 10) and the cross-linking agent is formed from the following X groups (see e.g. col. 2 line 26 to col. 3 line 5), specifically:




The agent further comprises a silicon (Z group in instant claim 30) that is attached to R1, R2, R3 (Y groups in instant claim 30). See e.g. the formula at col. 2 line

21 and the formula at col. 3 line 10). An example of the full cross-linking agent in the reference is given as the following:

where R1, R2 and R3 are alkoxy. See col. 2 line 31-34 and col. 3 line 10. This anticipates the instant invention where X is: $H_2C$=CH-, Z is: Si, and $Y_3$ is: an alkoxy (i.e. alkoxide). Furthermore, the alkoxy can be hydrolyzed (see e.g. col. 3 lines 34-38) thereby by creating a "dehydrating-combination reaction" when self-crosslinking or combining (see e.g. col. 4 lines 10-13): instant claim 31. The crosslinking agent further comprises GPTMS (see e.g. col. 3 lines 14-18 and claim 5): instant claim 36.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over SAU.

SAU teaches a material having cross-linking structure that is a modified substrate bonded to bridges formed by a cross-linking agent, as described above.

SAU does not explicitly teach where the content of GPTMS is about 0.5% to 70% of the chitosan. However, SAU does teach e.g. the use of 5% wt of the polysaccharide in Example 1 (100g of cellulose and 5g of GPTMS) and 15% in Example 2 (100g cellulose and 15g of GPTMS): instant claim 37.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to make a material comprising a GPTMS content of between 0.5% to 70% of chitosan, as taught by SAU. One of ordinary skill in the art at the time the invention was made would have been motivated to combine these elements into a single material because SAU teaches the use of chitosan (claim 10), a polysaccharide and the use of GPTMS with cellulose (Ex. 1 and 2), a polysaccharide at 5 and 15%. Absent any evidence to the contrary, and based upon the teachings of the prior art,

there would have been a reasonable expectation of success in practicing the instantly claimed invention.

***Conclusion***

No Claims are allowed.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. SAU (US 5,059,686).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRISTAN J. MAHYERA whose telephone number is 571-270-1562. The examiner can normally be reached on Monday through Thursday 9am-7pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL P. WOODWARD can be reached on 571-272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tristan J Mahyera/
Examiner, Art Unit 1615

/MP WOODWARD/
Supervisory Patent Examiner, Art Unit 1615